

Application No. 09/663,269
Amendment filed June 4, 2004
Reply to Office Action dated March 4, 2004

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Remarks

Claims 1-3, 6, 7, 9-14, 17, 18, and 20-22 are pending, with claims 1 and 12 being in independent form. Claims 1, 6, 9, 12, 17, and 20 have been amended. Claims 4, 5, 8, 15, 16, and 19 have been canceled without prejudice or disclaimer.

In the Office Action, claims 1-22 stand rejected for indefiniteness. The pending claims are believed to meet the requirements of the statute.

Claims 1, 2, 4-13, and 15-22 stand rejected for obviousness over U.S. Patent No. 6,249,682 to Kubo et al. ("Kubo") in view of U.S. Patent No. 6,603,733 to Laakso et al. ("Laakso"), and claims 3 and 14 stand rejected for obviousness over Kubo and Laakso in view of U.S. Patent No. 6,385,462 to Baum et al. ("Baum").

According to Applicant's description, the energy at which a transmit power control is transmitted is set based on how important it is that the transmit power control command is received. As an indication of how important it is that the transmit power control command is received, a difference between a quality, e.g., SIR, of a received signal and a reference is determined. The energy at which the transmit power control command is transmitted is set based on this difference. The energy of the transmit power control command may be set by adjusting the power at which the transmit power control command is transmitted and/or by adjusting the coding of the transmit power control command. If the difference is determined to be substantially zero, the energy at which the transmit power control command is transmitted is decreased by an amount that is a function of the difference.

If, however, the difference is determined not to be substantially zero, the energy at which the transmit power control command is transmitted is increased, whether the received signal quality is above or below the reference. That is, when the received signal quality is above the reference, indicating a strong signal, the energy at which the transmit power control command is transmitted is increased nonetheless, because it is important that the transmit power control command is received in order to lower transmission energy and prevent the wasting of system resources, such as power, and to prevent interference with other signals in the system.

For example, according to amended claim 1, in a communication system including at least one base station and at least one remote station and employing

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transmit power control, a method for controlling the energy at which a transmit power control command is transmitted includes determining a difference between a received signal quality and a reference and setting the energy at which the transmit power control command is transmitted based on this determination, the setting including increasing the energy when the difference is determined not to be substantially zero, whether the received signal quality is above or below the reference.

In accordance with the MPEP, three criteria must be met to establish a prima facie case of obviousness. First, the cited documents must teach or suggest all of the claim limitations. Second, there must be some suggestion or motivation, either in the cited documents themselves or in the knowledge generally available to one of ordinary skill in the art, to have combined the teachings of the cited documents. Third, there must have been a reasonable expectation that the documents could have been successfully combined.

The rejections cannot stand at least because no combination of the cited documents teaches all of the claim limitations. Motivations to combine the cited documents and reasonable expectations of successful combinations would also be absent, but it should be sufficient to point out the absent limitations.

The Examiner admits in the Action that "Kubo fails to explicitly teach setting the energy at which the transmit power control command is transmitted based on the determined importance it is that the transmit power control command is correctly received." Accordingly, Kubo also does not disclose or suggest increasing the energy at which the transmit power control command is transmitted is increased, whether the received signal quality is above or below the reference. Indeed, Kubo does not increase, or even set, *the energy at which the transmit power control command is transmitted*, but instead discloses, for example, "if the estimated SIR value is greater than the target SIR value, the comparator unit 196 creates a TPC command to decrease the transmission power" (col. 6, ll. 18-20), referring to the transmission power in the link opposite the TPC command.

Laakso discloses, at col. 3, ll. 43 -50:

According to the Invention, the reliability of the control information in the reception can be adjusted by sending the bits belonging to a given control field at a higher or lower power than the bits belonging to some other field of

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the same frame. When an optimal transmission power is found for the control field bits, the reliability of the control information in the reception has reached the desired level, and the total interference in the system remains as low as possible.

Laakso is concerned with making sure that control information is reliably received, and states: "Naturally an increase in the transmission power improves reliability in the reception, and respectively a decrease in the transmission power weakens reliability" (col. 3, ll. 51-53). Accordingly, Laakso discloses sending the control information at a power level just sufficient to ensure reliable reception at the receiver. Indeed, Laakso discloses, at col. 4; ll. 20-25:

The controlling of the transmission power separately for each control field improves the efficiency in the utilisation of radio resources, because an unnecessarily high power is not used for transmitting such control commands and other control information that can be received to a sufficiently reliable degree even when transmitted at a lower power.

Laakso discloses ensuring that an unnecessarily high power is not used for transmitting control commands that can be received to a sufficiently reliable degree when transmitted at a lower power. Thus, in Laakso if it is determined that a signal connection is strong, i.e., an SIR is higher than needed, the control commands will be transmitted at a lower power level to improve the efficiency of the use of radio resources by saving energy in the transmission of the control commands. That is, if the signal quality is good, e.g., above a reference value, the power level of the control commands is decreased.

In contrast, according to claim 1, the energy at which the transmit power control command is transmitted is increased when the difference is determined not to be substantially zero, whether the received signal quality is above or below the reference. That is, when the signal quality is good, e.g., above a reference value, the energy at which the transmit power control command is transmitted is increased, **in direct contrast with Laakso.**

This is not surprising when you consider that Applicant considers how important it is that the transmit power control command is received. In claim 1, when the signal quality of a received signal is too high, it is considered important that the transmit power control command is received at the transmitter of the signal to make

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sure the transmitter decreases the transmit power, and thus realizing an energy savings and reduced interference. Thus the energy level at which the transmit power control command is transmitted is increased. When the signal quality of a received signal is too low, it is again considered important that the transmit power control command is received at the transmitter of the signal to make sure the transmitter increases the transmit power to improve reception of the signal. Thus the energy level at which the transmit power control command is transmitted is again increased. In either situation, the power is increased.

This feature is clearly not disclosed or suggested in Laakso, which teaches away from this prospect, disclosing instead decreasing the power level of the control commands if the signal quality is good.

Accordingly, since the combination of Kubo and Laakso fails to disclose or suggest all of the claim limitations for at least the above reasons, the obviousness rejections of claim 1 should be withdrawn. Furthermore, independent claim 12 is also distinguishable for at least the same reasons. The respective dependent claims 2, 3, 6, 7, 9-11, 13, 14, 17, 18, and 20-22 are also distinguishable for at least the same reasons. Moreover, Baum fails to cure the aforementioned deficiencies.

In addition, the dependent claims recite additional distinguishing features not disclosed or suggested by the combination of Kubo and Laakso. For example, claims 11 and 22 recite "wherein the transmit power control is performed for the downlink direction, and the apparatus is included in a remote terminal."

In Laakso, all decisions are made at the base station or radio resource controller (RRC). Where appropriate, the mobile station either receives the results of the determination or provides input to help the determination, but never performs the determination itself, as in claims 11 and 22. With reference to FIG. 3 of Laakso, for power control commands transmitted in the downlink connection 305, when determined based on downlink quality 316, the quality is measured in the mobile station 317 and forwarded to the RRC 321. When it is determined based on uplink quality 339, the quality is measured in the base station and forwarded to the RRC 343. For power control commands transmitted in the uplink connection 350, only uplink connection quality 356 is considered and the quality is measured in the base

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station and forwarded to the RRC 364. In each case, all power level determinations are made at the RRC/base station, in contrast to claims 11 and 22.

The second requirement of a prima facie case of obviousness is also missing here. One of ordinary skill in the art would have had no motivation to combine Kubo and Laakso at least because the problems they aim to solve are different. Kubo is concerned with speed estimation. Kubo's apparatus detects the change of a transmission power control command transmitted from a receiving station and estimates the moving speed of the receiving station in mobile communications of a spread spectrum system. Kubo is not concerned with controlling power per se, but instead tracks a change in the TPC commands received to estimate speed. Laakso is not concerned with speed estimation, which is the problem Kubo was trying to solve, and thus it is hard to understand why one knowing Kubo would have been motivated to look to Laakso for anything. Moreover, the Action's suggestion that the documents can be combined ignores the great technical differences between Kubo and Laakso that would have made such a combination improbable to say the least.

It is respectfully submitted that the suggestion to combine such disparate documents, with no indication of any motivation for the combination of the documents themselves, may reflect a use of Applicant's claims as mere templates for picking isolated features from the art. Such hindsight reconstruction is improper. E.g., Sensonics, Inc. v. Aerisonic Corp., 38 U.S.P.Q.2d 1551 (Fed. Cir. 1996); In re Oetiker, 24 U.S.P.Q.2d 1443, 1446 (Fed. Cir. 1992) (reversing an obviousness rejection and stating the "reason, suggestion, or motivation" to combine (or modify) prior art "can not come from the applicant's invention itself. [Citation omitted.]").

Since there would have been no motivation to combine Kubo and Laakso as suggested in the Action, the second requirement of a prima facie case of obviousness is missing, and the obviousness rejections of the claims should be withdrawn for this reason, too.

The third requirement of a prima facie case is also missing. Even if one had attempted to combine the disclosures of the cited documents, one would have been more likely to arrive at something that did not work at all or not in the manner claimed by the present application. As discussed above, one of ordinary skill in the art would have known that the features of Kubo and Laakso cannot be combined

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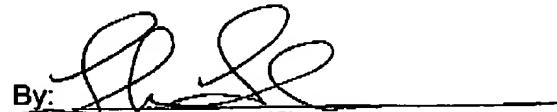
without further modification to reach the subject matter defined by claims 1 and 12. The combination does not disclose that the energy at which the transmit power control command is transmitted is increased, whether the received signal quality is above or below the reference. In the absence of any suggestion in the cited documents of how to make such a combination operable, one would have faced a serious engineering problem that naturally would have had a low probability of success without substantial experimentation and effort, especially in view of the need to modify the teachings of the documents. It is well settled that "[t]he mere fact that the prior art may be modified in the manner suggested by the Examiner does not make that modification obvious unless the prior art suggested the desirability of the modification." In re Fritch, 23 U.S.P.Q.2d 1780, 1783-84 (Fed. Cir. 1992).

Accordingly, the combination of documents relied upon to support the obviousness rejection of claims 1 and 12 is improper and the claim rejection should therefore be reconsidered and withdrawn. Furthermore, rejected claims 2, 3, 6, 7, 9-11, 13, 14, 17, 18, and 20-22 are novel and inventive for at least the same reasons as stated above.

For the foregoing reasons, Applicant considers the application to be in condition for allowance and respectfully request notice thereof at an early date. The Examiner is encouraged to telephone the undersigned at the below-listed number if, in the Examiner's opinion, such a call would aid in the examination of this application.

Respectfully submitted,

BURNS, DOANE, SWECKER & MATHIS, L.L.P.

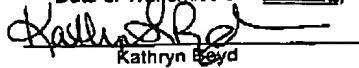
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 Kathryn E. Boyd